

DOCKET NO.: 01202DIV1

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

IN RE APPLICATION OF: :

Tristan BARBEYRON et al. :

SERIAL NO.: None assigned :  
(Division of application :  
Serial No. 09/269,731) :

FILED: Concurrently herewith :

FOR: GLYCOSYL HYDROLASE GENES AND THEIR USE FOR PRODUCING  
ENZYMES FOR THE BIO-DEGRADATION OF CARRAGEENANS

**PRELIMINARY AMENDMENT**

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

Prior to Examination of this application on the merits, kindly amend the application  
as follows.

**IN THE SPECIFICATION**

Page 1, between lines 2 and 3, insert the following paragraph:

**--CROSS-REFERENCE TO RELATED APPLICATIONS**

This application is a division of application Ser. No. 09/269,731, filed Apr. 5, 1999,  
which is a 371 of PCT/FR97/01768, filed October 6, 1997.--

Page 1, between lines 2 and 3, insert the heading: --BACKGROUND OF THE  
INVENTION--.

Page 3, between lines 2 and 3, insert the heading: --SUMMARY OF THE

INVENTION--.

Page 8, between lines 16 and 17, insert the heading: --BRIEF DESCRIPTION OF THE DRAWINGS--;

Page 8, replace the paragraph at line 20 to line 23 with the following paragraph:  
--Fig. 1: The maximum similarity alignment, according to the method of Needleman and Wunsch [J. Mol. Biol. 48, 443-453 (1970)], of the amino acid sequence of the iota-carrageenase of *Alteromonas fortis* (SEQ ID NO: 2) (top part) and the iota-carrageenase of *C. drobachiensis* (SEQ ID NO: 4) (bottom part).--

Page 8, replace the paragraph at line 28 to line 31 with the following paragraph:  
--Fig. 3: The maximum similarity alignment, according to the method of Needleman and Wunsch, J. Mol. Biol. 48, 443-453 (1970), of the amino acid sequence of the kappa-carrageenase of *Alteromonas carrageenovora* (SEQ ID NO: 6) (top part) and *Cytophaga drobachiensis* (SEQ ID NO: 8) (bottom part).--

### IN THE CLAIMS

Please cancel Claims 1-11 without prejudice or disclaimer of the subject matter thereof, and insert the following new claims:

--12. (New) An isolated protein having glycosyl hydrolase activity, said protein being selected from the group consisting of

- (a) a protein comprising an amino acid sequence depicted in SEQ ID NO: 2;
- (a) a protein comprising an amino acid sequence depicted in SEQ ID NO: 4;
- (b) a protein encoded by the nucleotide sequence of SEQ ID NO: 1;

(b) a protein encoded by the nucleotide sequence of SEQ ID NO: 3; and

(c) a protein having a hydrophobic cluster analysis (HCA) score with the iota-carrageenase of *Alteromonas fortis* which is greater than or equal to 65% over the domain extending between amino acids 164 and 311 of the amino acid sequence of *Alteromonas fortis* that is SEQ ID NO: 2.

13. (New) A protein according to claim 12, wherein the HCA score is greater than or equal to 70%.

14. (New) A protein according to claim 12, wherein the HCA score is greater than or equal to 75%.

15. (New) A protein according to Claim 12, comprising an amino acid sequence depicted in SEQ ID NO: 2, wherein the protein is extracted from *Alteromonas fortis*.

16. (New) A protein according to Claim 12, comprising an amino acid sequence depicted in SEQ ID NO: 4, wherein the protein is extracted from *Cytophaga drobachiensis*.

17. (New) A method of producing iota-oligocarrageenans, comprising

(a) genetically modifying a host cell with a nucleic acid molecule having SEQ ID NO: 1 or SEQ ID NO: 3, or with a vector comprising a nucleic acid molecule having SEQ ID NO: 1 or SEQ ID NO: 3;

(b) culturing the host cell until a protein having glycosyl hydrolase activity is produced;

(c) isolating the protein having glycosyl hydrolase activity;

(d) contacting the isolated protein having glycosyl hydrolase activity with a carrageenan until iota-oligocarrageenans are produced; and

protein.--


**REMARKS**

This divisional application is directed to subject matter not present in the allowed claims of application Serial No. 09/269,731. No new matter would be added to this application by entry of the amendment. Upon entry of this amendment, Claims 12-18 will be active in the application.

Favorable action is solicited.

Respectfully submitted,

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Nov 19, 2001

Date

FOOTNOTES

## AMENDMENT TO THE SPECIFICATION

The following paragraph was inserted on page 1, between lines 2 and 3:

### --CROSS-REFERENCE TO RELATED APPLICATIONS

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The following heading was inserted on page 3, between lines 2 and 3: --SUMMARY OF THE INVENTION--.

The following heading was inserted on page 8, between lines 16 and 17: --BRIEF DESCRIPTION OF THE DRAWINGS--;

The paragraph on page 8, line 20 to line 23 was amended as follows:

--Fig. 1: The maximum similarity alignment, according to the method of Needleman and Wunsch [J. Mol. Biol. 48, 443-453 (1970)], of the amino acid sequence of the iota-carrageenase of *Alteromonas fortis* (SEQ ID NO: 2) (top part) and the iota-carrageenase of *C. drobachiensis* (SEQ ID NO: 4) (bottom part).--

The paragraph on page 8, line 28 to line 31 was amended as follows:

--Fig. 3: The maximum similarity alignment, according to the method of Needleman and Wunsch, J. Mol. Biol. 48, 443-453 (1970), of the amino acid sequence of the kappa-carrageenase of *Alteromonas carrageenovora* (SEQ ID NO: 6) (top part) and *Cytophaga drobachiensis* (SEQ ID NO: 8) (bottom part).--

## AMENDED CLAIMS

Claims 1-11 were canceled.

Claims 12-17 were added.

703 412-1155

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